solar spectrum on the same plate—the only ones worth anything, have also been secured by Mr. Maunder. But we must not build too much on this, for, as I have said before, these photographs have not yet been developed; but if only one good one has been received, the laboratory work it should set going will take at least one or two years before the teachings of the precious record are exhausted. The so-called 'measurement' of such photographs is worth next to nothing.

"Among the records obtained on this occasion must be classed the disk observations, now for the first time included in the ordinary routine of eclipse work. The point of a disk observation is that an observer is by its aid able to observe the outlying solar appendages under the best conditions, so far as the sensitiveness of the eye is concerned. For ten minutes before totality the observer is blindfolded, and at the moment of the totality he is led to a small aperture through which, the bandage over his eyes having been removed, he sees a black disk some 40 feet away, which shuts off the moon and the brighter interior portion of the solar atmosphere. The eye, therefore, being thus shielded, is in the best position to pick up faint streamers extending beyond the borders of the disk, and to note their positions and extension. Streamers were thus noted at Grenada, extending far beyond the limits seen in the ordinary way, but the air was so saturated with aqueous vapour and incipient cloud, even where substantial clouds did not make their appearance, that the failure of any of the observers to see the equatorial extension observed by Prof. Newcomb in the clear sky of Wyoming, at an elevation of 7000 feet, in 1878, by no means proves that the extension was not there. The question of the continual existence of an extension of matter of some sort or other in the plane of the sun's equator must be held to be still *sub judice*.

"Capt. Archer at Fantôme Island, and Capt. Maling at Prickly Point, made disk observations fairly accordant. The former had greatly improved the disk provided him by surrounding it with concentric rings of wire, so that distances from the centre could be measured with the greatest accuracy.

"The records obtained by Prof. Thorpe regarding the intensity of the light of the corona were sufficient in number to suggest that when they are reduced a value will be obtained to be placed side by side for purposes of comparison with those previously obtained in 1870 and 1878. In this connection it may be remarked that the darkness of an eclipse must not be taken as a measure of the dimness of the corona, for, if the totality be longer, more of the brighter portion of the solar atmosphere will be covered. This was certainly the darkest eclipse seen since eclipse expeditions have been in vogue. This shows the importance of Prof. Thorpe's work, for if successful it will give us the luminous intensity per unit of surface of different regions of the solar atmosphere, as well as the intensity of the total light emitted.

"The preceding sketch of the results obtained has of necessity been of the most general character. Not till all the observations are published in detail, as they doubtless will be at no very distant date by the Royal Society, and not till they have been discussed by those competent to discuss them, can a final verdict as to their value be given. We have of set purpose dealt only with the conclusions which lie on the surface."

NOTES

THE death of Alessandro Dorna, Director of the Astronomical Observatory of Turin, took place on August 19 last, at the age of sixty-one years.

THE annual Congress of the Sanitary Institute of Great Britain commenced on Tuesday in York. Sir T. Spencer Wells, the President, commenced his inaugural address by expressing the hesitancy with which he accepted the position of President of the Congress, a hesitancy induced by the knowledge that he could not presume to appear before a body of sanitary experts as an instructor. Having referred to questions which had been dealt with in regard to sanitary science by his predecessors in the Presidential chair, he observed that it now remained to be considered how sanitary improvements might be carried still further by the co-operation of investigators, legislators, and administrators. As to the work of investigation, it had hitherto for the most part been personal, and the waste of labour had been enormous. The Institute must develop into something grander and more powerful. The Colleges of Physicians and Surgeons had done much, but it was rather for individual than collective good. Why should we not have a College of Health? The President then reviewed the work which those whom he called the "advanced guard of sanitary science" had accomplished, in lessening the death-rates of our population, and in benefiting the public health by prolonging life. Much of this he attributed to the coincident progress made in the science and art of medicine and surgery. He claimed for the medical profession a considerable share in the gain to the State of increasing numbers of more healthy subjects. We could not be far wrong if we put the average duration of human life in Great Britain half a century ago at about thirty years; now, according to the healthy life table, it was forty-nine years. Formerly it was calculated that a twenty-third part of the population was constantly sick, and the products of all that labour for the time necessarily withdrawn. A great deal of this sickness had been altogether prevented, and the duration of that which comes in spite of sanitation was lessened. He then dealt with the progress which had been made, since the Sanitary Institute had come into existence, in the moral and physical condition of our population. Dealing then with the various subjects to which the Institute had given attention, he divided them into five groups: (1) those relating to the training and health of the population; (2) to their social comfort and well-being; (3) to the prevention of disease; (4) to the care of the sick; and, lastly, those relating to the disposal of human refuse and remains. As to teaching the public on sanitary matters, it could never be done without elaborate organisation and legislative authority.

ONE of the tasks undertaken by the authorities of the British Museum since printing has taken the place of handwriting in the Catalogue is the publication of certain important sections of the Catalogue in separate parts. Thus the entries under America, Cicero, Luther, London, and many others have already appeared. The last of these is one of special scientific interest: it is a reprint of that part of the Catalogue which is classified under the head Academies. The definition of academies for the purpose is "Learned and Scientific Societies." The entries fill five parts, making a thick folio volume of about one thousand pages. In the great written Catalogue, which is well known to all readers, twenty-eight volumes were given to this one subject. The headings have been thoroughly revised throughout, and the names of a number of societies have been expunged, to be placed under more appropriate headings. Thus, agricultural societies, schools, political clubs, &c., which had crept into the Catalogue by degrees in course of time, have all been omitted. As it is, the total number of entries is about 32,000. "London" is the longest sub-heading; it fills nearly 200 pages, with about 6500 entries. Paris, St. Petersburg, and Berlin have about 3000 entries each; Vienna and Amsterdam about 1000. Towns are used for sub-headings, and under these are arranged alphabetically the names of the societies issuing the publications. The old sub-headings of countries have been abolished. Formerly the sub-headings would read thus:—

"Academies, &c.,—Great Britain and Ireland,—London, Royal Society." The towns are now arranged alphabetically, regardless of countries. Only completed series are fully entered; works in progress are, according to the rule of the Museum, catalogued with the date of the first volume, and the words "in progress." The work covers the greater part of the scientific literature of the world; when the Catalogue of "periodical publications" is finished, there will be little relating to science which cannot be found under appropriate heads in one or the other. It seems like looking the gift-horse in the mouth, but we cannot refrain from observing that the value of these five volumes would be enormously increased if some approximation to a subject index could be added to them. It would be a simple task to have headings Chemistry, Microscopy, Geology, &c., under which were given the names of the towns where societies on these subjects are to be found. The student would then have before him at a glance the names of all the societies on the globe working at any particular subject. Instances will present themselves to every student in which the first name of a society, and that by which it has to be sought in the Catalogue, does not always indicate the sphere of work of the society. The price of the Catalogue unbound is, it should be added, a sovereign.

THE small launch *Volta*, which is propelled by the electric current, in a method invented by Messrs. Stephens and Co., of Millwall, left Dover on Monday morning last week on her voyage across the Channel. The hull of the *Volta* is 37 feet long and nearly 7 feet beam, built of galvanised steel plates. She has a very light appearance in the water. Her bow is about 2 feet above the water-line, and from this point down towards the stern she gradually reduces the depth of her gunwale. Her deck is nearly or quite on a level with the water. Below the deck, which is securely fastened down, are placed the electric accumulators, all coupled together with the coils. They are little square boxes about 6 by 12 inches, and are wedged in closely together so as to prevent shifting, and to fill the whole of the space below the deck. The propelling power consists of sixty-one accumulators, and a pair of Reckenzaun electromotors, also placed beneath the floor, so that the whole of the boat is available for passenger accommodation. The motive-power is under complete control, and the speed can be regulated to whatever rate is required. The speed of the launch is regulated by a main switch, and there are special switches for going astern, the whole of the apparatus being easily managed by one man. The power of the motors may be varied at will from 4 horse-power to 12 horse-power, whilst the screw-propeller, which is coupled direct to the motor-shaft, makes from 600 to 1000 revolutions per minute, according to the position of the switch handle. The *Volta* returned to Dover shortly before 8 o'clock, having completed a voyage which is regarded as a great scientific success. When the boat arrived at Calais it was found that the amount of electricity remaining in the accumulators warranted the return journey being attempted. When the voyage was completed, the current from the accumulators was still powerful, notwithstanding that during the last half-hour of the journey the launch had been driven at the rate of 14 miles an hour, and rushed through the water at such a rate as nearly to throw it over her bow. The total distance traversed was about 50 miles. During the voyage the speed was varied at will by means of the switch. The experiment is regarded by all those on board as a success far in advance of anything they expected. An incident occurred on the passage which illustrates the noiselessness of the little vessel. About mid-Channel the pilot observed a sea-gull floating asleep on the water. The boat was steered close to the bird, which was caught by the neck by one of those on board, and brought alive to Dover.

INTELLIGENCE has been received from Lieut. Schwatka, who was sent to Alaska in command of an exploring Expedition by the proprietors of the *New York Times*. On the way to Mount St. Elias, which dominates the range to which the same name has been given, the party crossed a river, the existence of which had been hitherto unknown. At a distance of eight miles from the mouth it is a mile in width, and its current flows at the rate of ten miles an hour. This is thought to be the largest river that enters the Pacific Ocean, and the glacial mud it brings down with it discolours the waters of Icy Bay for some miles out to sea. The river has been named Jones River, after Mr. George Jones, of New York, one of the promoters of the Expedition. To the east the explores saw a glacier twenty miles wide, which extended for fifty miles along the base of the St. Elias Alps. Assuming the land beneath it to be flat, the thickness of this glacier is about 1000 feet. It was named after Prof. Agassiz. Another glacier, to the westward, was named after Prof. Guyot. After three days' marching, Lieut. Schwatka and his party came upon a third glacier, which they named in honour of Prof. Tyndall. From this point they resolved to make a final dash as far as they could go into the heart of this grand but desolate icy region. At the end of twenty hours' labour they came in sight of the south side of the great mountain to which belongs the icy girdle along which they had been travelling. They saw before them glaciers rising, sometimes perpendicularly, to heights varying from 300 to 3000 feet. The Tyndall glacier, comparatively safe so far, was safe no longer. Enormous crevasses, some as much as 30 feet across, now became frequent; and the bands of ice between them were so narrow, that, in places, the explorers appeared to themselves to be walking on a bridge like that of a house roof, with a chasm hundreds of feet deep on each side. These and other difficulties, such as are familiar to Alpine climbers, had been surmounted until a height of 7200 feet above the level of the sea had been attained. As nearly the entire journey was above the snow-level, this ranks among the best climbs on record. The Lieutenant telegraphs that he hopes, by renewing his attempts upon the mountain on its northern and eastern sides, to make further contributions to geographical science, and perhaps to ascend the mountain to a greater height; but the probability is that Mount St. Elias will long remain an unscaled peak. Mr. Seton Karr states that the whole region is vastly superior to any other mountainous district with which he is acquainted. One incident of the journey was the discovery of three peaks, ranging from 8000 feet to 12,000 feet in height, which were severally named after President Cleveland, Mr. Secretary Whitney, and Capt. Nicholls.

LAST autumn a few science classes were started as a preliminary experiment in rooms belonging to the Royal Victoria Hall, at the nominal fee of 1*s*. on first entrance and 1*s*. 6*d*. per class for the session. The success achieved has encouraged the promoters to extend the scheme, and this year it is intended to hold classes in mathematics, chemistry, animal physiology, drawing, arithmetic, geometry, electricity, political economy, and English literature. Some of these classes will be in connection with South Kensington. Last year they were welcomed in the most enthusiastic way by the comparatively small number who knew of their existence; no pains were taken to advertise them, as it seemed likely the numbers would exceed the available accommodation. This has now been improved, and it is hoped that a very useful branch has been added to the work at the Hall. The entertainments, concerts, and lectures which go on in the large hall are in no way interfered with thereby; in fact the lectures gain by the existence of systematic instruction to which they lead up. Those at present announced are: October 5, Mr. W. L. Carpenter, on "What may be done with a New Lantern"; October 12, Dr. W. D. Halliburton, on "The Germs of Disease"; October 19, Prof. Judd, on "A Piece of Pumice-Stone."

The Canadian salmon on view in the Canadian Section of the Colonial and Indian Exhibition which were hatched out last April in the building are thriving well.

The Indian fish lately imported into the Aquarium of the Colonial and Indian Exhibition from Calcutta seem thoroughly at home in their artificial existence. There are two species on view, viz., the *Sacchobranchus fossilis*, or scorpion fish, and the *Ophiocephalus striatus*, or walking fish. A large consignment of German carp has just arrived, together with some Chinese goldfish and specimens of *Siluris glanis*.

The first field-meeting of the County of Middlesex Natural History and Science Society was held on Saturday, the 18th inst., at Hampstead and Highgate. Between 60 and 70 members assembled at Hampstead Heath Station at 2.30 p.m., and were conducted thence by the Rev. F. A. Walker, D.D., and Mr. Clement Reid, F.G.S. Passing along the top of the Vale of Health to "Jack Straw's Castle," the party proceeded along the northern side of the Heath and reached "The Spaniards" about 4.30. At different points on the route the geology and physical features of the district were explained by Mr. Reid. At "The Spaniards" the party were unexpectedly met by Mr. Goodwin, of Highgate, who had obtained the kind permission of Lord Mansfield for the members to walk through the Park. Mr. Goodwin conducted the microscopical section to the ponds. where they were richly rewarded. Leaving the Park, the party proceeded to Highgate Schools, where they were received by Dr. McDonall, the head master, entertained at tea by the honorary secretary, Mr. Klein, and they afterwards inspected the collections of insects, mostly collected and arranged by Dr. Walker. At 7 o'clock the members assembled in the theatre of the Highgate Institute, where, after some short notes by Mr. Lloyd, the honorary secretary of the Institute, on "Highgate and Highgate Worthies," Mr. Mattieu Williams read a short paper upon "Some Peculiarities of London Atmosphere," which was followed by a discussion, in which Messrs. W. L. Carpenter, R. Hammond, and others took part. The Rev. Dr. Walker then made some interesting remarks on the different orders of insects represented in the collections of the Highgate Schools.

Science reports that Captain Dutton, of the United States Geological Survey, has recently been engaged in studying Crater Lake in Oregon, which he has found to be probably the deepest body of fresh water in the country. Boats were transported over a hundred miles of mountain road from Ashland, and had to be lowered 900 feet to the water. The steepness of the wall of the lake was very great. The depths ranged from 853 to 1996 feet, the average being about 1490 feet. The descent to the lake is partly over talus, covered with snow above, and rocky broken ledges lower down.

The works for deepening the Seine to a depth of 3 metres have been finished. The river can now be navigated by vessels of about 1000 tons burthen, which are supplied with movable masts and chimneys for the bridges.

We have received the report of the Otago Acclimatisation Society for the past year. The operations of the Society have been almost entirely confined to pisciculture, and apparently must be so for some years owing to the spread of poisoned grain over the country, and to the increase of the natural enemies of the rabbit, which are also the natural enemies of birds. But in pisciculture much has been done, and much more remains to be done, for the salmon and the herring are not yet numbered amongst New Zealand fishes. An experiment, which has so far been successful, for the introduction of the *Salmo salar* has been made; similarly in the cases of Loch Leven trout, *Salmo fontinalis*, and brown trout. Brown trout have been acclimatised with such success, that the Society is in a position to supply an almost unlimited demand for ova, as well as to provide liberally for the requirements of New Zealand streams. The late secretary, Mr. Arthur, had begun the collection of a series of data from which he hoped to gain some information respecting the sea-fish of New Zealand, and ultimately to arrive at something definite in regard to the nature and habits of some of the most important of them. The collection and tabulation of these returns and the important investigations of Mr. Arthur are being continued by Mr. Thomson. It is perhaps scarcely necessary to add that Sir James Maitland has seconded the efforts of the Society in acclimatising *Salmonidæ* in every possible way. The only wonder is that important public work of this nature should be left wholly to private endeavour.

A "transportable electric lighthouse" has been lately invented by M. Beduwe, a builder in Liége. The idea is, to furnish the light in any place on short notice; and it is thought the apparatus might prove useful in public works, cases of accident, gatherings in public places, *fêtes*, &c. The constituent parts are (1) a telescopic system of copper tubes bearing the light; (2) a three-cylinder steam-engine to drive either a Gramme machine, or a suction and force pump; (3) a vertical boiler on the tubular system; and (4) a reservoir for water. The whole is mounted on a four-wheeled carriage. The light is raised by hydraulic force. Further details may be found in *Le Génie Civil* of September 4.

The first number of a monthly scientific journal made its appearance at Rio de Janeiro on July 25 in connection with the Philotechnic Institute of that city. It bears the title of *Revista Philotechnica*, and takes the place of the recently defunct *Revista Polytechnica*. Its object will be the practical and experimental study of the sciences, and of their application especially to the development of the arts and industries in Brazil. The first number contains papers on practical astronomy, by F. Behring; on building materials, by F. de Sá; and on practical chemistry, by Ad. Uchõa, chief editor.

A New York telegram states that several detonations and tremors occurred at Summerville between Saturday night and Monday night, and three shocks of earthquake, two of which were accompanied by detonations, were also felt there early on Tuesday morning. At Charleston three shocks of earthquake occurred on Monday night, one of which, at about daybreak, shook the houses to such an extent that many of the occupants ran terrified into the streets. One of the shocks was accompanied by detonations.

The additions to the Zoological Society's Gardens during the past week include a Malbrouck Monkey (*Cercopithecus cynosurus* ♀) from West Africa, presented by the Rev. H. R. Moolenaar; a Black-backed Jackal (*Canis mesomelas*) from West Africa, an Algerian Tortoise (*Testudo mauritanica*) from North Africa, presented by Mr. A. T. Marsh; two Elegant Galidias (*Galidia elegans*) from Madagascar, presented by Mr. Burt. C. Muller; two Black Rats (*Mus rattus*) from Sark, Channel Islands, presented by Mr. W. F. Collings; a Bateleur Eagle (*Helotarsus ecaudatus*) from Lamoo, East Africa, presented by Dr. W. Somerville; a Wild Duck (*Anas boschas*), European, presented by Mr. K. Lawson; a Barn Owl (*Strix flammea*), European, presented by Mrs. E. Holloway; a Common Marmoset (*Hapale jacchus*), two Black-eared Marmosets (*Hapale penicillata*) from South-East Brazil, a Common Otter (*Lutra vulgaris*), British, two Ariel Toucans (*Ramphastos ariel*) from Brazil, deposited; a Common Crowned Pigeon (*Goura coronata*), two Auriculated Doves (*Zenaida auriculata*), bred in the Gardens.